

ZOOLOGY—A new *Garibius* from Virginia, with a key to the North American congeners (*Chilopoda: Lithobiomorpha: Lithobiidae*). R. E. CRABILL, JR., Smithsonian Institution.

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*Garibius* is one of the genera of microlithobiids whose center of dispersal seems to be the southeastern United States. Its members are distinguished chiefly by their rather long, thin bodies and long, evenly inflated ultimate legs, which, in the males, bear a low setigerous tibial lobe pierced by a distinct gland canal. In addition, their possession of 20 antennal articles, of 2+2 prosternal teeth, their lack both of produced tergites and divided anterior tarsi, and the absence in most of DPA on leg 15 help to distinguish the known species.

Until recently, no typical<sup>1</sup> member of the genus was known to have more than two dorsal prefemoral spurs on each of the ultimate legs, so that the formula 15D=10200 or 10210 was a convenient feature for easy generic identification. However, collecting in the mountains of southwestern Virginia, Richard L. Hoffman uncovered a new species that places a slightly different complexion upon the genus. The specimen seems typical except for the presence of an anterior dorsal spur upon the ultimate tibia, i.e., 15D=10310. It differs from its congeners in other respects as well. Although the presence or absence of a single spur alone is often not significant, I believe that the presence of one in this case is, chiefly because of the identity and critical position of the spur.

Considering the industry with which Mr. Hoffman has collected the Blacksburg, Va., area for many years without ever bringing to light more than a single specimen of the new species, I suspect it to be quite rare, at least in this particular locality. During the same

period and in the same area Mr. Hoffman's efforts have resulted in the accumulation of numerous specimens of *Garibius opicolens* Chamberlin (see discussion), apparently the most common member of the genus.

Following the description below is a key to the known American species of *Garibius*. It is based largely upon the data presented in 1913<sup>2</sup> by R. V. Chamberlin, whose work remains virtually our sole source of information on the majority of the species. The presentation of the data has been altered in some respects to conform with ideas developed from my studies of several of the species, notably *opicolens*.

The examination of the specimens at my disposal has revealed no better criterion for the definition of a species in *Garibius* than plectrotaxy. Dimensions, vestiture, sculpturing, and to a lesser extent size and color seem untrustworthy, whereas the linear dispersions of a number of the spur-series here seem more stable and predictable than they do in various other microlithobiid groups e.g., *Tidabius* and possibly *Sozibius*. Of course this impression, based upon the study of a sizable series referable to *opicolens*, may be quite erroneous. On the basis of this premise, that the plectrotaxic variation observed in my series of *opicolens* is essentially like that of closely-related species, Hoffman's specimen seems sufficiently distinctive to warrant being called new.

One must admit that the relationship of any of these species, including *psychrophilus*, n.sp., and *opicolens*, to the hypothetical biological or polytypic species is not clear at this time; indeed no myriapod has yet been subjected to the scrutiny of modern population systematics. Unfortunately centipedes—especially these centipedes—are so rare in collections that there is very little opportunity for studying variation and particu-

Chamberlin, Bull. Mus. Comp. Zool. 57(2): 61-80, 1913.

<sup>1</sup> By typical, I refer to those forms whose males are known to have the customary setigerous, tibial lobe on leg 15. On this basis *G. dendrophilus* Chamberlin is excluded, for the examination of scores of adult males has revealed no such lobe. As a matter of fact, there is reason to believe this species is actually the European *Monotarsobius crassipes* (Koch), specimens of which have been intercepted at quarantine in this country upon at least one occasion.

larly distribution effectively, hence to examine these ancient animals as members of evolving, kinetic systems through the eyes of the New Systematics. Therefore we cannot be sure now whether the presently recognized species of *Garibius* are geographical subspecies and interbreeding populations of one or two polytypic species, or whether the genus is a true complex of reproductively-isolated populations. But aside from that, the evidence at hand suggests that at least some of these forms are representative of real populations of some kind and are not merely unique, local variants.

*Garibius psychophilus*, n. sp.

Of the known members of the genus only *catawbae* Chamberlin and the new species have a dorsal spur on the fifteenth femur, but in addition *psychophilus* differs from all of its congeners in possessing an anterior prefemoral spur dorsally on the ultimate leg, i.e., 15D = 10310. At the same time a number of other features suggests its real affinity, not with *catawbae*, but with *georgiae* and *alabamiae*, both of Chamberlin. Of these, *georgiae* seems the more closely related to *psychophilus*, for both are relatively smaller forms, display essentially the same color patterns, lack of coxal armature, and have certain critical spur-series (VPP and VFP) whose anterior limits are displaced quite far to the rear (see the key, 3a and 3b).

Holotype, ♂. Virginia, Montgomery County, Blacksburg, February 1957. Richard L. Hoffman, leg. Deposited in the United States National Museum; Myriapod type number 2382.

Total length: 7.0 mm. Color: tergites and legs 1-13 pale sordid yellow, not fulvous or brownish, without a longitudinal dark streak; cephalic plate, antennae, and legs 14 and 15 deeper yellow, approaching yellowish orange. Antennae: each 2.3 mm long, with 20 articles; setae moderately dense, each long and pale. Cephalic plate: length to greatest width 1:1, each dimension 0.75 mm; surface shiny, impressed with large areolations; marginal interruptions present but very obscure, the lateral flange essentially continuous; each eye-group of three series, i.e., 1 + 4, 3, 2, the single ocellus, the upper serial ocelli, and the Organ of Tömösvary all essentially equal in size. Prosternum: very sparsely clothed with long, pale setae; chitin-lines complete; teeth 2 + 2, a line through their apices so slightly

recurved as to appear essentially straight; medial diastema narrow, acute, strictly V-shaped; porodonts setiform, conspicuous, their tips deflected medially. Tergites: sparsely setose; slightly rugose; like the head relatively coarsely areolate; non produced; posterior margins of major tergites either straight or only slightly incised; greatest width of the tenth is 0.75 mm. Legs: anterior tarsi entirely without evidence of division; tarsus 15 without accessory claws, with pretarsus only, pretarsus 14 with only the inner accessory claw, the outer (setiform) accessory not apparent; ventral tarsal vestiture distinctly denser than that of other leg articles; no coxa laterally armed, coxal pores of both right and left sides, 2, 3, 3, 2; legs 15, as usual, very long, excluding the coxa 2.3 mm, legs 14 excluding coxa 1.8 mm long; ultimate tibia 2.33 times longer than greatest width (measured from above), distally with a distinct setose, glandular, dorsomedial lobe, this pierced by a conspicuous, pigmented gland canal.

Plectrotaxy: where C = coxa, T = trochanter, P = prefemur, F = femur, Ti = tibia; and a = anterior, m = medial, p = posterior.

	Dorsal				Ventral			
	C	P	F	Ti	T	P	F	Ti
1		p	a	a			m	m
2		p	ap	a			m	m
3		p	ap	a			am	m
4		p	ap	a			am	m
5		p	ap	a			am	m
6		p	ap	a			am	m
7		p	ap	a			am	m
8		p	ap	ap		p	am	m
9		p	ap	ap		p	am	am
10		p	p	ap		p	am	am
11		mp	p	ap		p	am	am
12	a	mp	p	p		mp	am	am
13	a	mp	p	p		amp	am(p)	am
14	a	mp	p		m	amp	am	
15	a	amp	p		m	amp	am	

CONCERNING GARIBIUS OPICOLENS AND  
PAGOKETES CHAMBERLIN AND BRANNERI  
(BOLLMAN)

According to Chamberlin (op. cit., pp. 62, 63), the chief distinction between *pagoketes* and *opicolens* is the presence in the former of two pairs of laterally-armed posterior coxae and of only one pair in the latter. Also, spur-series VTiA begins on leg 2 in Chamberlin's type of *opicolens*, and on 7 in the type of *pagoketes*. My

examination of a series of specimens referable to *opicolens* shows clearly that samples *always* have either one or two pairs of coxae laterally armed, so that the significant distinction in *Garibius* seems to be between: 1) specimens *without any* lateral coxal armature (e.g. *georgiae* and *psychrophilus*); and 2) specimens with lateral spurs at *least* on the 15th coxae. In the same material the anterior limit of VTiA was found to vary greatly, from leg 1 through leg 8, so that distinguishing between the two forms on this basis seems meaningless. All available evidence considered, *opicolens* and *pagoketes* appear to be conspecific. Invoking the right of the first reviser, I select *opicolens*, whose full description has page priority, as the senior synonym of *pagoketes*.

It is also likely that both Chamberlin species are referable to an older name, *Lithobius* (= *Garibius*) *branneri* Bollman, which was based upon seven specimens captured at Knoxville, Tennessee. Unfortunately we cannot be positive of this synonymy, for the original description permits no more than a generic assignment, and none of the National Museum's cotypes is sufficiently complete to permit a solution to the problem. Provisionally, then, it seems necessary to regard *branneri* as *species inquirendae*.

KEY TO THE NORTH AMERICAN SPECIES OF GARIBIUS

- (1a) DFP present on 15, i.e. 15D=10310 or 10210..... 2
- (2a) 15D=10310. DPM begins approximately on 11. VFP begins approximately on 13. VPP begins approximately on 8. No coxa laterally armed. .... *psychrophilus*, n.sp.
- (2b) 15D=10210. DPM begins on 1-3. VFP begins on 1-3. VPP begins on 1-3. At least coxae 15 laterally armed ..... *catawbae* Chamberlin
- (1b) DFP absent on 15, i.e., 15D=10200..... 3
- (3a) VPP begins on 9-13..... 4
- (4a) No coxae laterally armed. DPP begins on 1-3. *georgiae* Chamberlin
- (4b) At least coxae 15 laterally armed. DPP begins approximately on 12..... *alabamiae* Chamberlin
- (3b) VPP begins on 1-3..... 5
- (5a) VPF begins approximately on 8 ..... *mississippiensis* Chamberlin
- (5b) VFP begins on 1-3..... 6
- (6a) VPA absent on 11 and 12..... *opicolens* Chamberlin
- (6b) VPA present on 11 and 12..... *monticolens* Chamberlin<sup>3</sup>

<sup>3</sup> This may be a valid point of distinction, for one each of my specimens of *opicolens*—of whatever stage of epimorphic development and in adults—VPA begins on 13, never on 11 or 12.

STANDARD MUSICAL PITCH

One of the lesser known services of the National Bureau of Standards is the broadcasting of a musical tone of standard pitch—middle "A" at 440 cycles per second—over its shortwave stations WWV (Beltsville, Md.) and WWVH (Maui, Hawaii). These broadcasts make standard pitch available day and night throughout the United States and over much of the world. Since a shortwave receiver is all that is needed, easy access to standard pitch is thus provided for piano tuners and amateur and professional musicians, as well as for makers of musical instruments.

A 600-c/s tone is also broadcast. This, together with the 440-c/s tone, is used by scientists, electronics engineers, and manufacturers in the measurement of short intervals of time and for calibrating instruments and devices that operate in the audio and ultrasonic frequency ranges. Both the 440- and the 600-c/s tones are obtained from an electronic, crystal-controlled oscillator and

are accurate, as transmitted, to better than 1 part in 100,000,000.

The two frequencies are broadcast alternately, starting with 600 c/s on the hour for 3 minutes, interrupted 2 minutes, followed by 440 c/s for 3 minutes and interrupted 2 minutes. Each 10-minute period is the same except that WWV is off the air for 4 minutes beginning at 45 minutes after each hour; and WWVH is silent, in addition, for a 34-minute period each day beginning at 1900 Universal Time (9 a.m. in Hawaii or 2 p.m. E. S. T.).

To provide greater assurance of reliable reception, transmissions from the NBS stations are made simultaneously on several standard broadcast frequencies. WWV broadcasts on 2.5, 5, 10, 15, 20, and 25 Mc (megacycles per second) and WWVH broadcasts on 5, 10, and 15 Mc.

In this country, A = 440 c/s has been accepted as standard pitch since 1925. Initially, this value